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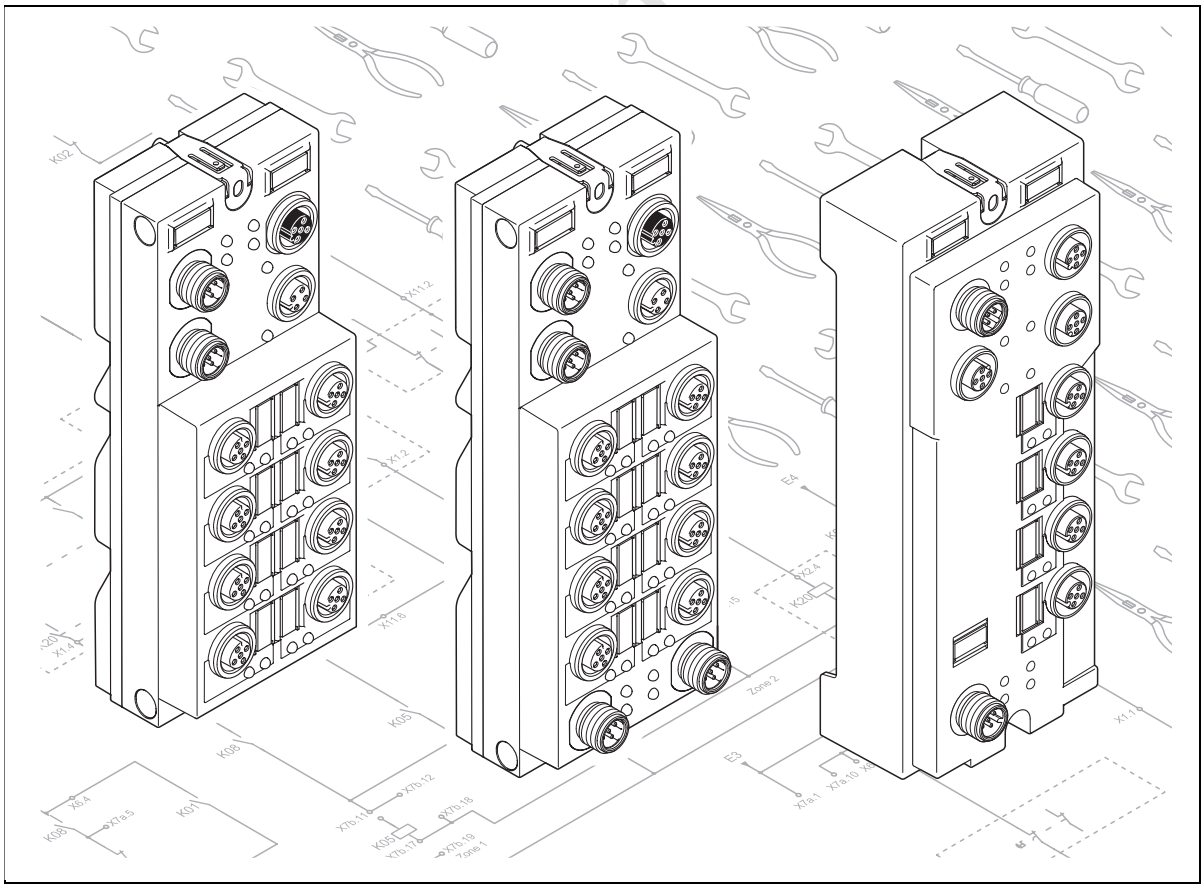
PHOENIX CONTACT
INNOVATION IN INTERFACE

User Manual

Configuring an INTERBUS System Using Devices in the Fieldline Product Range

Designation: FLS FLM IB SYS PRO UM E

Order No.: 27 99 06 6



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User Manual

Configuring an INTERBUS System Using Devices in the Fieldline Product Range

Designation: Fieldline

Revision: C01

Order No.: 26 99 06 6

This manual is valid for:

Devices in the Fieldline product range
for the INTERBUS system

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Please Observe the Following Notes

In order to guarantee the safe use of your device, we recommend that you read this manual carefully. The following notes give you information on how to use this manual.

Qualifications of the User Group

The products described in this manual should be installed/operated/maintained only by electricians or persons instructed by them, who are familiar with applicable national standards. Phoenix Contact assumes no liability for damage to any products resulting from disregard of information contained in this manual.

Explanation of Symbols Used

The *attention* symbol refers to an operating procedure which, if not carefully followed, could result in damage to equipment or personal injury.

The *note* symbol informs you of conditions that must strictly be observed to achieve error-free operation. It also gives you tips and advice on hardware and software optimization to save you extra work.

The *text* symbol refers you to detailed sources of information (manuals, data sheets, literature, etc.) on the subject matter, product, etc. This text also provides helpful information for the orientation in the manual.

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FOR USE IN POTENTIALLY EXPLOSIVE AREAS, PLEASE OBSERVE THE FOLLOWING:

- THIS EQUIPMENT IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C AND D OR IN NON-HAZARDOUS LOCATIONS ONLY
- WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I; DIVISION 2.
- WARNING EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS:
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1 Fieldline on the INTERBUS

1.1 The Fieldline Product Range

The input and output devices in the Fieldline product range are designed for distributed automation tasks in harsh environmental conditions. The devices meet the requirements for IP65/IP67 protection. They enable the direct connection of sensors and actuators in an environment close to the station.

The Fieldline product range includes the Fieldline Stand-Alone (FLS) and Fieldline Modular (FLM) product groups.

Fieldline Stand-Alone devices cannot be extended and have a directly integrated fieldbus connection and I/O level. They are used for distribution in the field when only a few digital I/O points are required.

Fieldline Modular devices consist of a bus coupler (gateway) and I/O devices that can be connected. They are used for special functions, primarily for applications with a high I/O node density and complex functions.

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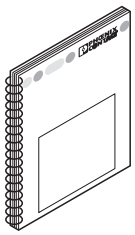
1.2 Documentation for Fieldline Devices

The documentation for Fieldline devices is modular, providing you with the optimum information for your specific bus system.

This user manual describes only the INTERBUS-specific features of the devices.

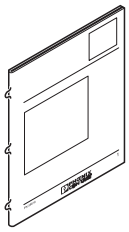
You also require the following documentation:



Installation of Devices in the Fieldline Product Range FLS FLM SYS INST UM E (Order No. 26 89 7 3)

This user manual describes the devices for all bus systems.
This includes:

- The device properties, which are the same for all bus systems
- Mounting
- The voltage supply concept and connection



Device-Specific Data Sheet

The data sheet describes the specific properties of a device.
This includes:

- Function
- Local diagnostic and status indicators
- Connector pin assignment and connection example
- Programming data
- Technical data

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1.3 INTERBUS

INTERBUS is a fieldbus standardized according to IEC 61158 for the serial transmission of data on the sensor/actuator level.

For a general description of INTERBUS with information on, e.g., the bus topology, system data, and cable lengths, please refer to the "General Introduction to the INTERBUS System" user manual (IBS SYS INTRO G4 UM E; Order No. 27 45 21 1).

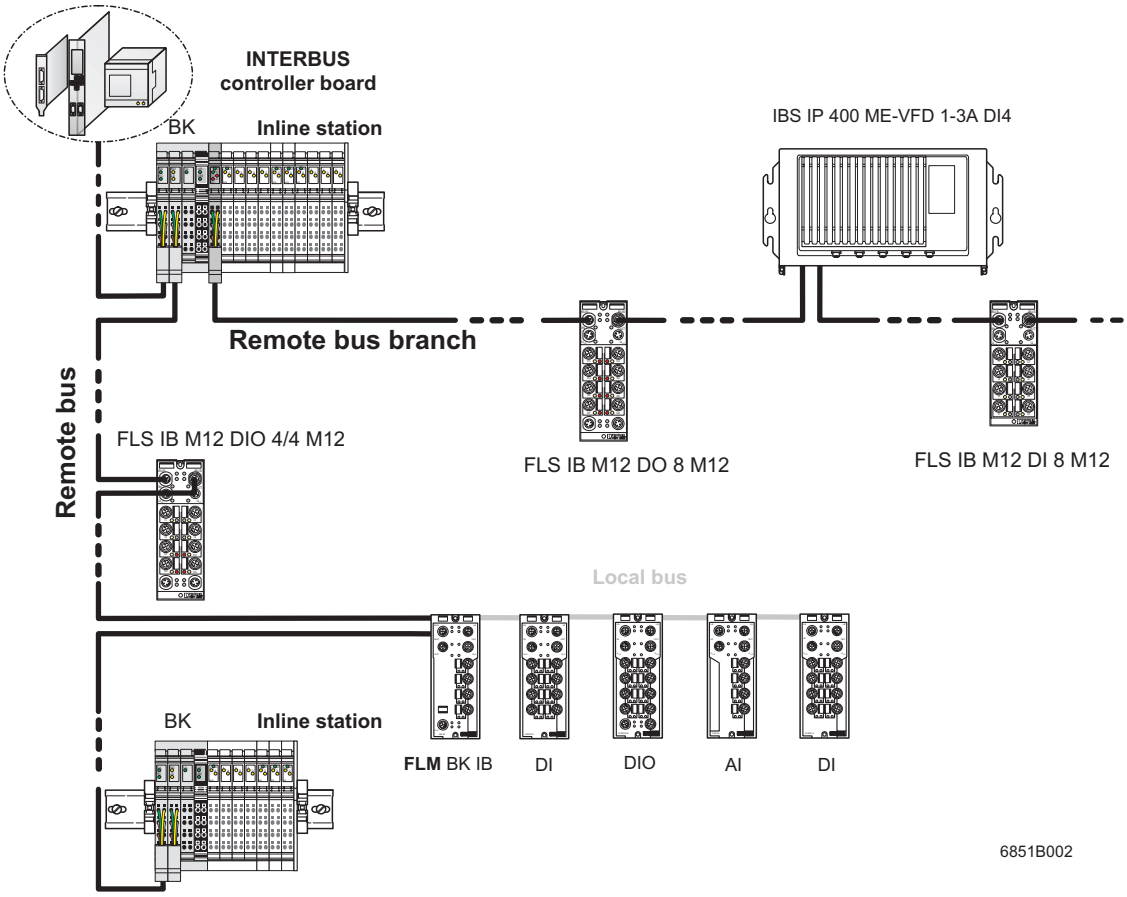

Figure 1-1 Typical structure of an INTERBUS system with remote bus and local bus

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1.4 Fieldline Modular Local Bus

A Fieldline Modular local bus is a bus connection that branches off from a remote bus via a bus coupler (FLM BK IB) and connects the Fieldline Modular local bus devices with each other. The bus coupler opens a powerful local bus, which can be used to connect up to 16 more devices. Devices are Fieldline modular local bus devices used to implement a local bus station. The bus coupler provides the power supply.

The maximum total length of a local bus is 20 m. The transmission speed can be switched from 500 kBaud to 2 MBaud.

The bus coupler can also be connected to up to eight digital sensors via M12 connectors, which are double-assigned. It supplies the sensors with the required voltage and reads the available signals.

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2 Connecting Bus Cables

In the following, a cable that conforms to the INTERBUS specification must be used to connect INTERBUS.

Use shielded M12 connectors to connect the bus. The thread of the M12 connector is used to connect the shielding to functional earth ground.

Phoenix Contact recommends the use of pre-assembled bus cables (see the Phoenix Contact AUTOMATIONWORX catalog).

If you assemble the cables yourself, please follow the description provided in the Fieldline user manual FLS FLM SYS INST UM E (Order No. 26 98 93 7) and the device-specific data sheet.

BUS IN/BUS OUT

Connect the incoming bus to the BUS IN socket and the outgoing bus to the BUS OUT socket.

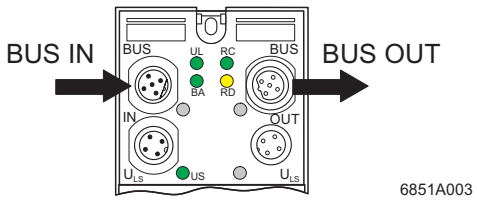

Figure 2-1 Bus connection

Accessories: Two M12 connectors

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For a device that is followed by another device, the incoming and outgoing bus must be connected (Figure 2-2, A). For the last device of a remote bus, only the incoming bus is connected (Figure 2-2, B). To ensure IP65/IP67 protection, cover the unused BUS OUT connection with a protective cap (1).

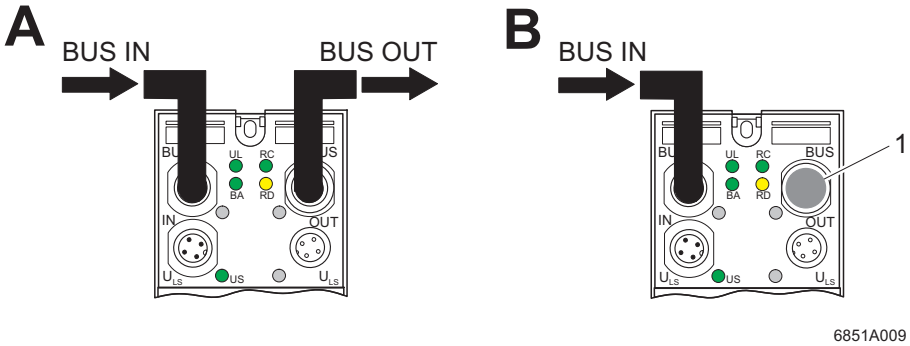

Figure 2-2 Connecting INTERBUS

Connecting the bus

Connect the bus via BUS IN/BUS OUT.

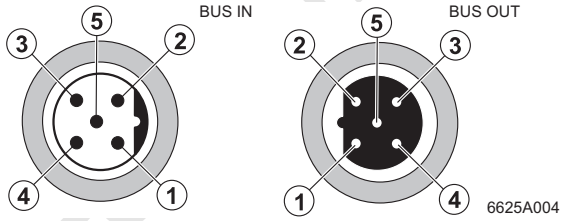

Figure 2-3 INTERBUS pin assignment (connections on the device)

Pin	IN	OUT
1	DO	DO
2	$\overline{\text{DO}}$	$\overline{\text{DO}}$
3	DI	DI
4	$\overline{\text{DI}}$	$\overline{\text{DI}}$
5	GND	GND

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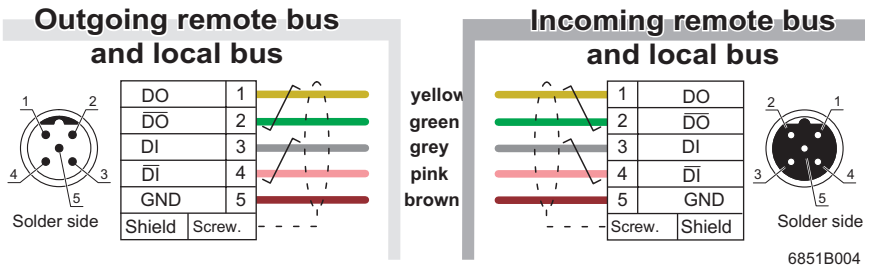

Figure 2-4 Connector pin assignment of the M12 connector (INTERBUS) (connector on the cable)

The thread is used for shielding.

Encoding of the connections

In the INTERBUS system, the connections for the bus are B-encoded and the connections for the supply voltage are A-encoded. In this way, the bus and supply voltage cannot be mixed up.

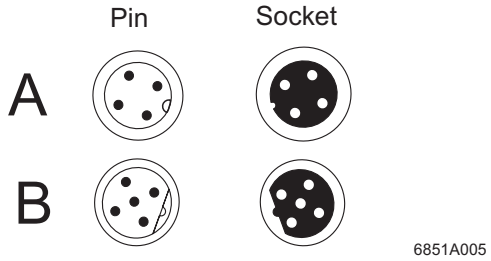

Figure 2-5 Difference between A and B-encoding (connections on the device)

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3 Configuration and Startup

3.1 Configuring the INTERBUS System

The INTERBUS system with a controller board with firmware version 4.40 (G4) or later must be used to ensure the optimum use of all system and diagnostic functions.

To configure your system, proceed as follows:

- Describing and Defining the Task
  - Specify the device range for the I/O devices
  - Specify the type and number of input and output signals
- Select the devices required
  - Specify the devices to be installed according to the input and output signals
- Considering system restrictions
  - Take into account the basic system specifications (see IBS SYS INTRO G4 UM E, Order No. 27 45 21 1)
- Select the voltage supply
  - Please refer to the information on the power supply in the FLS FLM SYS INST UM E User Manual (Order No. 26 98 93 7)
  - The selection of suitable power supplies always depends on the particular system. The following criteria should always be met for the 24 V DC voltage supply:

Nominal value:	24 V
Tolerance:	±25 % (complies with EN 61131-2: -15 % / +20%)
Incl. ripple:	±5%

    This corresponds to a range of 18 V to 30 V (ripple included)

A selection of suitable voltage supplies can be found in the INTERFACE catalog from Phoenix Contact.

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- Select INTERBUS cables

For interference-free transmission, Phoenix Contact recommends a 6-wire, twisted pair and shielded cable.

A selection of suitable bus cables can be found in the AUTOMATIONWORX catalog from Phoenix Contact.

3.2 Installation

Disconnect the power supply before installing the devices.

- Installing devices
  See User Manual FLS FLM SYS INST UM E.
- Connecting the bus
  See Section "Connecting Bus Cables" on page 2-1.
- Connecting the supply voltage
  See FLS FLM SYS INST UM E user manual.

Further measures are not necessary for installation. It is **not necessary** to set an address or the baud rate or to use termination resistors for INTERBUS.

3.3 Configuration and Startup

For configuration, parameterization, and visualization of the system, CMD software Version 4.40 or later is available for standard controller boards. PC WORX software Version 2.x or later is available for use with a Field Controller (FC) or a Remote Field Controller (RFC).

Please refer to the relevant documentation of software used for the configuration and startup of Fieldline devices.

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A Appendix: Ordering Information

The Phoenix Contact AUTOMATIONWORX catalog contains the ordering data for all Fieldline products.

Products include:

- Fieldline devices
- Bus cables
- Shielded bus connectors
- Unshielded connectors
- Other accessories

For additional information about Fieldline devices and accessories, visit the Phoenix Contact eShop at www.phoenixcontact.com.

Complete documentation for the Fieldline devices can be found on the Internet at www.phoenixcontact.com.

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Phoenix Contact GmbH & Co. KG
Marketing Services
Dokumentation INTERBUS
32823 Blomberg
GERMANY

Phone +49 - (0) 52 35 - 3-00
Telefax +49 - (0) 52 35 - 3-4 18 08
E-Mail tecdoc@phoenixcontact.com

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